## Space Weather Forecast

Issued on Tuesday, 12 April 2022 at 13:45 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Increasing Chance of Minor Geomagnetic Storms on Day 2 and 3 (13 and 14 Apr).**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Low over the past 24 hours, with several low common class flares. There is now one sunspot region on the Earth-facing disc on the northeast quadrant. Yesterday's CME is forecast to impact Earth on the 14th April.

**Solar Wind / Geomagnetic Activity:** The solar wind was indicative of a waning fast wind from a coronal hole, though did strengthen again towards the end of the period to around 500 km/s. The interplanetary magnetic field (IMF) was weak, though did increase towards the end of the period. The north-south component also varied weakly. Geomagnetic activity has been Quiet (Kp 1-2).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Solar activity is expected to be Very Low, with only one small and simple sunspot on the disc. There remains a Chance of further Common-class flares through the forecast period, bringing the activity up to Low.

**Solar Wind / Geomagnetic Activity:** There is the possibility of a weak CME arrival early on Day 2 (13 Apr). A second and probably stronger further CME left the sun on 11 April and is forecast to arrive on Day 3 (14 Apr). Current coronal hole fast wind effects are giving slightly elevated solar winds which will probably slowly decline through the period.
Geomagnetic activity is forecast to be Quiet to Unsettled with a chance of Active intervals and a slight chance of G1/Minor Storms on Day 1 (12th). There is also a Chance (40%) of G1/Minor Storms on Day 2 (13th) should the CME from 09 April give a glancing blow. Following this on Day 3 (14 April) Active to G1/G2 Minor/Moderate Storms becomes likely with a slight chance (10%) of G3/Strong Storm on arrival of the second CME that departed the sun on 11 April. Activity then is likely to mostly return Quiet to Unsettled during Day 4 (15 April).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 10 | 40 | 70 | 40 |
| Strong | G3 | No | 1 | 1 | 10 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 1 | 1 | 1 | 1 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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